REMARKS

Claims 9-62 are pending. Claims 9-33 have been withdrawn from consideration. Independent Claim 34 has been revised for clarity. New Claims 59-62 find support in the specification on page 3, lines 4-28, page 4, lines 26-32, and on page 7, line 16-page 8, line 14. The Applicants believe that these portions of the specification provide ample support explicitly or implicitly for SEQ ID No. 1, fragments of SEQ ID No. 1, or sequences at least 90% identical to SEQ ID No. 1. Accordingly, the Applicants do not believe that any new matter has been added.

The Applicants thank Examiner Hutson for the courteous and helpful discussion of April 13, 2004. It was suggested that editorial revisions to Claim 34 to clarify that the recited fragments had methylene tetrahydrofolate reductase activity, would help address the rejections of record, especially the prior art rejections based on the claims possibly reading on one or two amino acid fragments of SEQ ID No. 2. Claim 34 has now been so amended. It was suggested that the Applicants address the Wands factors in their response to the rejections under 35 U.S.C. 112, first paragraph. These arguments are presented below. Accordingly, favorable consideration of this amendment is now respectfully requested.

Claim Objections

Claims 34-39, 54 and 56 were objected to for editorial reasons. These objections are moot in view of the amendment above.

Rejection-35 U.S.C. 112, second paragraph

Claims 34-58 were rejected under 35 U.S.C. 112, second paragraph, as being indefinite. These rejections are moot in view of the amendment of Claims 34, 38, 39 and 56.

Rejection-35 U.S.C. 112, first paragraph

Claims 34, 38, 39, 40-44, 46-48 and 50-58 were rejected under 35 U.S.C. 112, first paragraph, as lacking adequate description. The concern pertains to description of sequences having at least 90% identity with either SEQ ID NO: 1 (nucleic acid) or SEQ ID NO: 2 (polypeptide) in view of the previous asserted indefiniteness of the claim language. T

The Applicants have now clarified the claim language and the sequences which are at least 90% identical to SEQ ID NO: 1 encode a polypeptide having methylene tetrahydrofolate reductase activity, and those at least 90% identical to SEQ ID NO: 2 have methylene tetrahydrofolate reductase activity. These sequences are described structurally by their at least 90% identity to a fully disclosed sequence (e.g., SEQ ID NO: 1 or 2) and by the functional activities of the polypeptides they encode, i.e. methylene tetrahydrofolate reductase activity. Accordingly, the Applicants respectfully request the withdrawal of this ground of rejection.

Rejection-35 U.S.C. 112, first paragraph

Claims 34, 36, 38, 39, 40-44, 46-48 and 50-58 were rejected under 35 U.S.C. 112, first paragraph, as lacking adequate enablement for any polynucleotide comprising a mere 15 consecutive nucleotides of SEQ ID NO: 1. Initially, the Applicants point out that the claims have been editorially revised for clarity to indicate that the claimed fragments of SEQ ID NO: 1 encode polypeptides having methylene tetrahydrofolate reducatase activity, and the fragments of SEQ ID NO: 2 have methylene tetrahydrofolate reductase activity.

It was suggested that the Applicants address In re Wands, 8 USPQ2d 1400 (Fed. Cir. 1988) factors, see MPEP 2164.01(a). The following analysis of the Wands factors indicates that undue experimentation would not be required in order to make and use the claimed polynucleotides:

(1) breadth of the claims. As amended the claims are directed to sequences which are at least 90% identical to SEQ ID NO: 1 or SEQ ID NO: 2 and which encode polypeptides with, or themselves have, methlene tetrahydrofolate reductase activity. These claims do not read on an unlimited genus of polynucleotides, but are limited both structurally and functionally.

(2) The nature of the invention involves the isolation of genes or expression of proteins having methylene tetrahydrolate reductase activity.

(3) The state of the prior art: Pages 1 and 2 of the specification show that fermentive production of amino acids by *Corynebacteria* is well-known and that recombinant techniques have been employed for years for improving *Corynebacterium* strains which produce L-amino acids.

(4) The level of one of ordinary skill in the art is high. The Applicants submit that the level of skill in the art of a molecular biologist is generally at the graduate or post-graduate level.

(5) The level of predictability in the art is high within the claimed "at least 90% identity" range as one with skill in the art would be able to fairly predict suitable changes, e.g., conservative amino acid substitutions and sense mutations of neutral function (specification, page 7, lines 27-32), changes at the N and C termini (specification, pages 7-8, bridging paragraph) and could screen such variants for enzymatic function using the methodologies set forth in the specification, e.g., by measuring enhancement of methionine production (specification, pages 24-26).

(6) The specification provides a working example of the isolation, amplification and production of a bacterial strain with the improved ability to produce methionine, see pages 22-26. Such a methodology could be applied to other variants of the metF gene falling within the scope of the claim language.

(7) The quantity of experimentation required is reasonable based on the cloning and screening procedures disclosed and exemplified in the specification. In molecular biological screenings it is not uncommon to make and screen thousands, or even millions of different variants.

Accordingly, the Applicants respectfully request that this ground of rejection be withdrawn in view of (A) the clarification of the claim language and (B) in view of the above analysis of the Wands factors.

Rejection-35 U.S.C. 102(b)

Claims 34, 38, 39, 41-44, 46, 51, 53, 55 and 56-58 were rejected under 35 U.S.C. 102(b) as being anticipated by Blanco et al., J. Bacteriol. 180:1586. The rejection indicates that the Blanco polynucleotide sequence is not itself 90% identical to a polynucleotide which encodes the polypeptide of SEQ ID NO: 2. As discussed, the concern was that small fragments of the Blanco polypeptide, e.g. a glutamine or alanine residue, would read on the claims. The claims have now been amended to avoid this issue. Accordingly, the Applicants respectfully request that this rejection be withdrawn.

Rejection-35 U.S.C. 103(a)

Claim 40 was rejected under 35 U.S.C. 103(a) as being unpatentable over Blanco et al., J. Bacteriol. 180:1586. The Applicants submit that this rejection is moot in view of the amendments above as set forth in the response to the anticipation rejection.

CONCLUSION

In view of the above amendments and remarks, the Applicants respectfully submit that this application is now in condition for allowance. Early notification to that effect is earnestly solicited.

Respectfully submitted,

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